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(56) Related Art
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US 4270330
NZ 329269

ABSTRACT

Improved Pallet Construction and Repair

A wooden pallet including bearers (10) to which there is attached cross boards (12). At least the leading boards (12) are attached to the bearers (10) by means of nail plates (14) through which the nails (13) pass to secure the cross boards (12) to the bearers (10). The nails (13) pierce the nail plates (14) to securely engage therewith.

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COMPLETE SPECIFICATION

FOR A STANDARD PATENT

ORIGINAL

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Invention Title: Improved Pallet Construction and Repair

ASSOCIATED PROVISIONAL APPLICATION DETAILS

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The following statement is a full description of this invention, including the best method of performing it known to me/us:-

Improved Pallet Construction and Repair

Technical Field

The present invention relates to wooden pallets and more particularly to a novel construction which provides both a stronger new pallet and ways to fix conventional wood pallets.

Background of the Invention

A conventional Australian wooden pallet consists of three bearers and a number of cross boards. The bearers are typically parallel, one along each edge of the pallet and one down the middle. The cross boards are nailed perpendicular to the bearers on both sides. Each of the two open ends forms a pair of openings between the ends of the exposed bearers. The openings are to receive the forks of a towmotor or forklift. The four cross boards closest to the openings (top and bottom, each end) are called the lead boards. It is natural that the lead boards generally receive more use and more punishment than the other boards.

In some pallets, full length bearers are not used. In a four way or four entry pallet, bearer segments take the place of full length bearers.

This invention addresses the inadequacies of current wooden pallet construction and provides a means of repair as well.

Object of the Invention

It is the object of the present invention to overcome or substantially ameliorate the above disadvantages.

Summary of the Invention

There is disclosed herein a pallet having:

a plurality of bearers;

a plurality of load bearing cross boards;

a plurality of nail plates engaging the bearers so as to be secured thereto and to aid in securing at least one of the boards to the bearers; and

a plurality of nails passing through the nail plates and the associated board or boards and engaging with the nail plates and associated board or boards to secure the associated board or boards to the bearers.

There is further disclosed herein a pallet having:

a plurality of bearer blocks arranged in rows, a plurality of bearer boards, each bearer board joining a row of blocks so as to be supported thereon and secured thereto;

a plurality of load bearing boards secured to the bearer boards; and

a plurality of nail plates engaging the blocks so as to be secured thereto and a plurality of nails passing through at least one of the bearer boards and engaging with

the nail plates to secure the associated bearer board or boards to the blocks, and/or a plurality of nail plates engaging the bearer boards so as to be secured thereto and a plurality of nails passing through the load bearing boards and engaging with the nail plates secured to the bearer boards to secure the load bearing boards to the bearer boards.

Brief Description of the Drawings

A preferred form of the present invention will now be described by way of example with reference to the accompanying drawings wherein:

Figure 1 is a perspective view of a conventional wooden pallet;

Figure 2 is a perspective view of a joint between a bearer and a cross board according to the teachings of the present disclosure;

Figure 3 is a perspective view of a ring shank nail;

Figure 4 is a cross-sectional view of the tip of the nail shown in Figure 3; and

Figure 5 is a top view of a pallet constructed according to the disclosure.

Detailed Description of the Preferred Embodiment

As shown in Figure 1, a conventional wooden pallet includes a plurality of spaced generally parallel, co-extensive longitudinal stringers or bearers 10 and a number of spaced parallel cross boards 12. The cross boards 16 nearest the pallet ends are called the lead boards. The ends of the bearers 11 and the cross boards 16 define openings which accept the forks of a towmotor or forklift. The lead boards generally take more wear and abuse than the other boards.

As shown in Figure 2, a joint between a cross board and any wooden bearer can be greatly improved. As shown there, a nail plate 14 is located between the bearer 10 and the cross board 12. The nail plate 14 is typically a galvanised steel plate which has been perforated to form rows of pointed nail-like projections 17 on one side. The nail plate is first driven into the surface of the bearer 10. The cross board 12 is then placed over the nail plate 14. Nails 13 are then driven through the cross board 12 and through the nail plate 14 and into the bearer 10. In a preferred embodiment the nails 13 are arranged to pierce an unperforated portion 15 of the nail plate 14. Because the nail plate 14 is so well secured to the bearer 10 by the many projections 17 and because the nails pass through and are tightly gripped by the nail plate 14, the bond between the cross board and the bearer is much stronger than a direct nailing of the cross board to the bearer. This is true, even when using conventional nails.

As shown in Figure 3 and 4, the mechanical grip between the nail board and the nail can be improved with the use of a ring shank nail 13. The shank 18 of a ring shank nail is characterised by a number of tapered teeth or rings 15 which extend along

the length of the shank. The point 14 of the nail is adapted to penetrate a steel plate and timber.

As shown in Figure 5, it is particularly advantageous to construct a new pallet with the above construction applied to any or each of the three joint between any lead board 16 and the bearers. It is also advisable to fasten each of the four lead boards as one can not predict the orientation of the pallet when used in the field. This type of construction is particularly strong and when compared to conventional nailing, has up to 30 times the impact strength when ring shank nails are used and 15 times the impact strength even when regular nails are used. The nail plate not only strengthens the joint in the first instance, but also prevents the holes in the bearers made by the nail from deforming and enlarging over time.

Note in Figure 5 that the nail pattern is preferably staggered, using four nails in a diamond shaped pattern.

The present invention therefore offers a relatively simple and inexpensive way to extend the life of a wooden pallet by greatly increasing the lead board's resistance to impact. It also offers a repair technique and a retrofit for used pallets. There are two upper lead boards and two lower lead boards.

The above mentioned "four-way entry" pallets consist of a series of eight or nine blocks which are arranged in three rows. Two sets of bearer boards are then attached to the blocks, with three bearer boards on top and three bearer boards below. Each bearer board joins a row of the blocks. The load bearing boards are then attached to the bearer boards. In this construction of pallet, the nail plates are located between the blocks and the bearer boards and/or the bearer boards and the load bearing boards. As discussed above nails would then pass through the bearer boards, pierce the nail plate and secure the bearer board to the blocks. In the case of securing the load bearing boards to the bearer boards, the nails would pass through the load bearing boards, pierce the nail plates and enter the bearer boards. The nail plates would have their projections entering the blocks and/or the bearer boards.

The claims defining the invention are as follows:

1. A pallet having:

a plurality of bearers;

a plurality of load bearing cross boards;

a plurality of nail plates engaging the bearers so as to be secured thereto and to aid in securing at least one of the boards to the bearers; and

a plurality of nails passing through the nail plates and the associated board or boards and engaging with the nail plates and associated board or boards to secure the associated board or boards to the bearers.

2. The pallet of claim 1, wherein there are three bearers which are generally parallel, transversely spaced and coextensive, and the cross boards are generally parallel, the boards including a lead board which is secured to the bearers by the nail plates and nails.

3. The pallet of claim 2, wherein there are two on four lead boards, each of which is secured to the bearers by the nail plates and nails.

4. The pallet of claim 1, 2 or 3, wherein the nails are ring shank nails.

5. The pallet of any one of claims 1 to 4, wherein the nails are inserted through unperforated portions of the nail plate.

6. A pallet having:

a plurality of bearer blocks arranged in rows, a plurality of bearer boards, each bearer board joining a row of blocks so as to be supported thereon and secured thereto;

a plurality of load bearing boards secured to the bearer boards; and

a plurality of nail plates engaging the blocks so as to be secured thereto and a plurality of nails passing through at least one of the bearer boards and engaging with the nail plates to secure the associated bearer board or boards to the blocks, and/or a plurality of nail plates engaging the bearer boards so as to be secured thereto and a plurality of nails passing through the load bearing boards and engaging with the nail plates secured to the bearer boards to secure the load bearing boards to the bearer boards.

7. The pallet of claim 6, wherein there are two or four leading boards, each of which is secured to the bearer boards by the nail plates and nails.

8. The pallet of claim 6 or 7, wherein the nails are ring shank nails.

9. The pallet of claim 6, 7 or 8, wherein the nails are inserted through unperforated portions of the nail plate.

10. A pallet, substantially as hereinbefore described with reference to Figures 2 to 5 of the accompanying drawings.

Dated 27 November, 1997
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Patent Attorneys for the Applicant/Nominated Person
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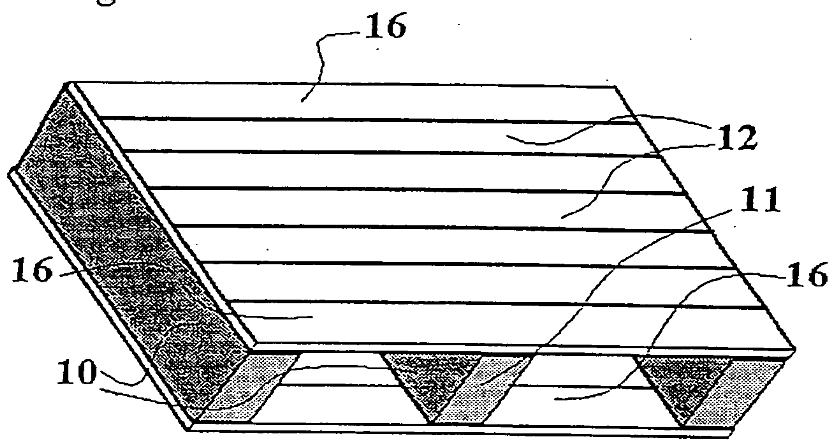
Figure 1



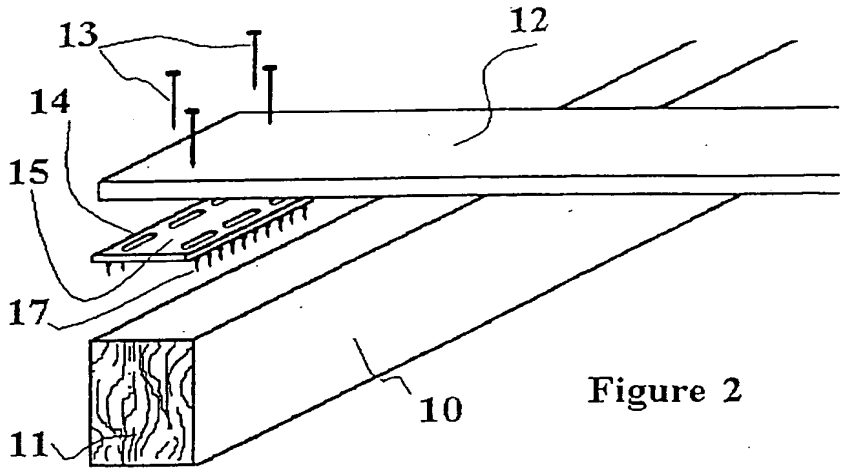


Figure 2

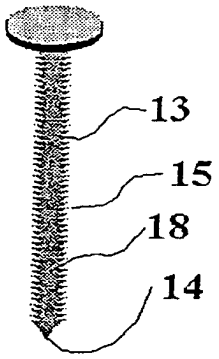


Figure 3

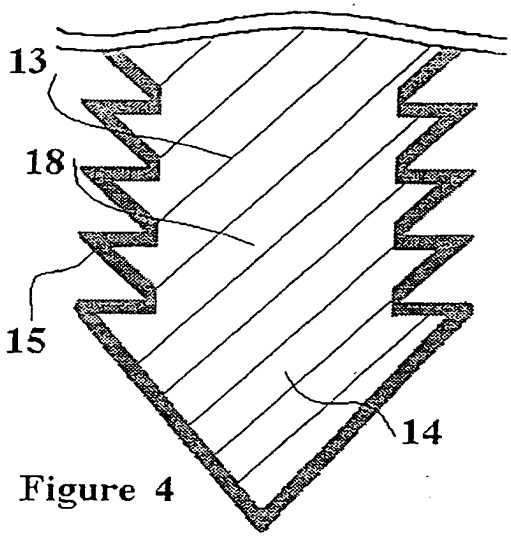
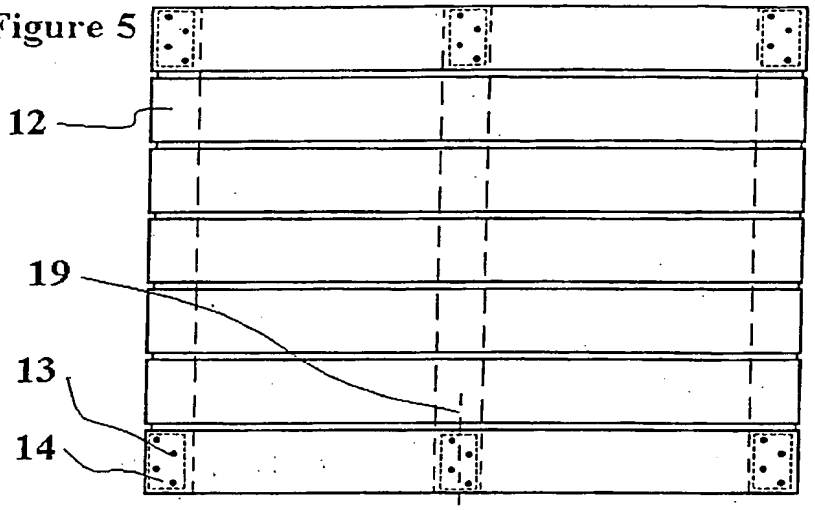


Figure 4

Figure 5



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